

### 306 THE BASIC OPEN-HEARTH STEEL PROCESS

3rd. From the removal of the reducing agents there is a growth of bath of iron to the following extent:—

4-00 per cent. Oxl'47 (vide 74)=5'S8 per cent. 1-00 „ Six 1-00 ( „ 68)=1-00 0-08 „ PX2-00( „ 70)=0-16

Total . „ .7-04 per cent. Less 0-50 „ MnxO-32 (vide 72)=0-H\*

Net growth . 6\*88 per cent.

The foregoing pig iron is suitable for the acid Bessemer process; its composition is, according to Campbell and Ledebur, actually that which yields the best of all results with this process, namely the highest production and a shrinkage of only 8 per cent.

Assuming the following prices, viz. :

Pig iron.

Limestone

Ore

75 Marks per ton

5 „ 25 „

one obtains the following comparison :-

| Charge.                                                                                                                                        | Acid Bessemer Process.    | Basic Open-Hearth Furnace.                                                                                                       |
|------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| (ft) Pig Iron . . (1)<br>Additions —<br>Limestone .<br>Ore ... (c)<br>Contingent<br>Materials —<br>Furnace )<br>repairs<br>. j Fuel .<br>. . . | 1,000 at<br>75M.=75,000M. | Tons. 1,000 at<br>75M. = 75,000M.<br>84 „ 5M.=<br>420M. 200<br>„ 25M.= 5,000M.<br>1,070 „ 2M.=<br>2,140M. 214,,<br>12M.= 2,570M. |
| Value of<br>Materials<br>Steel<br>produced .                                                                                                   | 75,000M. 920<br>'5,000 .  | 85,130M. 1,068<br>85,130                                                                                                         |
| Cost of<br>Material j<br>per ton of<br>steel ><br>produced .<br>(.)                                                                            | 920                       | 1,068                                                                                                                            |

This yields the certainly unexpected result that under the circumstances the basic open-hearth furnace can work cheaper than the acid Bessemer process itself. Naturally in such investigations, the exact prices of pig iron and ore must be taken into account.